



Successful Resin Cleaning Saves Pharmaceutical Plant \$160,000

Plant

The site is a large pharmaceutical plant in the Netherlands.

Background

The boiler on the site is a water tube boiler which operates at 60 bar and produces steam at 140 tonnes/hour. The feed water to the boiler is demineralised and the pre-treatment plant consists of 3 anion and 3 cation resin beds. Each bed contains 4,000 litres of ion exchange resin beads.

The site noticed a reduction of water flow through the pre-treatment plant and were continually being advised by GE Betz that the boiler water feed was of poor quality. This reduction of flow rate and resin capacity was resulting in an increase of regeneration frequency with a subsequent increase in regeneration costs, the deterioration in feed water quality meant that there was potential for scale formation within the boiler.

In order to correct the situation the site had to choose between investing \$160,000 in new ion exchange resin, or to attempt to clean the existing resin.

Problem Solution

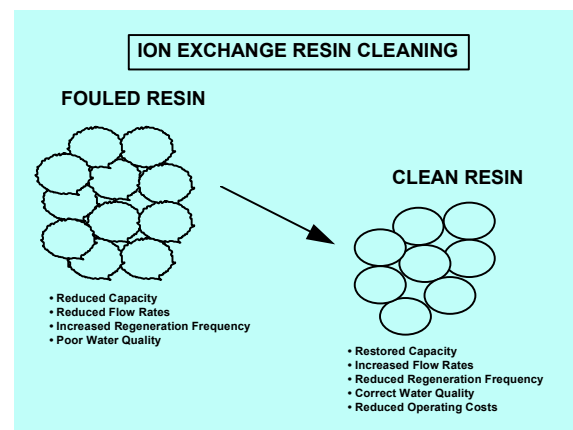
The ion exchange resin was inspected and found to be coated and bound together with a deposit. Samples of the deposit were collected for analysis and dissolution studies in the laboratory.

The deposit was a mixture of crystallised calcium salts, accumulated suspended solids, together with a high proportion of microbiological slime.

Laboratory studies indicated that a mildly acidic solution containing sequestrants, dispersants

together with a biocide and a biodispersant would successfully remove the deposits.

The resin beds were circulated with a 10% cleaning solution together with 1000ppm of biocide at ambient temperature for 12 hours. Using this procedure the deposits were removed.



Conclusion

The cost of the clean was \$10,000 thus saving the site an investment of \$160,000 for the replacement of the ion exchange resin. The cleaning of the resin and restoring of capacity allowed the pre-treatment plant to operate on a normal regeneration frequency which saved \$40,000/year in regeneration chemicals.

Overall, the cleaning of the resin saved the site a significant amount of money and ensured that the boiler plant received the correct quality feed water.